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(Editorial policy continued on inside back cover)

Cover Photo: *Ambystoma talpoideum* from White Oak Mountain Wildlife Management Area.

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# Catesbeiana 41(1)



John White: Toad



# Natural History Notes on the Salamanders of White Oak Mountain Wildlife Management Area

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## Abstract

For the past 20 years, we have been collecting observations on salamanders from White Oak Mountain Wildlife Management area in northern Pittsylvania County. Eleven species of salamanders were observed at this site. This paper covers the phenology, parasites, and additional natural history observations made during the survey period. We report on the activity dates, distribution, habitat preferences, and various natural history notes on the salamanders found at White Oak Mountain Wildlife Management Area.

**Keywords:** phenology, natural history, salamanders, chiggers, parasites, *Ambystoma talpoideum*

## Introduction

The state of Virginia hosts a large number of salamander species. At the current 55 species, the state is considered a hotspot for salamander diversity. Some of these 55 species are very well known while for others very little is known about basic aspects of their natural history. Over a 20 year period of time we visited White Oak Mountain Wildlife Management Area hundreds of times. Almost every area of the WMA has been walked and we have surveyed in every month of the year. No formal surveying was undertaken with standardized methods and visits were often informal and for personal enjoyment. On every visit, however, methodical notes were taken, and many photographs collected to document the salamanders that inhabit this area. Although we searched every month, most visits were

made during good weather during the spring and summer or during optimal breeding times. To our knowledge, surveying for salamanders has not occurred here before our searching began in 2000.

A quick search of VertNet.org shows that several hundred specimens of amphibians have been collected in Pittsylvania County. These specimens have been stored in different museums around the country since the 1940s. A search of the written literature on amphibians in Pittsylvania County however yields only a small number of field notes (Gibson, 2001; Gibson, 2002a; Gibson, 2002b; Gibson, 2002c; Gibson, 2003a; Gibson 2003b; Gibson and Cassidy, 2005; Gibson and Mitchell, 2006; Gibson and Sattler, 2006; Gibson and Sattler, 2010;



Schultz et al., 2018; Gibson, 2020) on only a few species and two papers written on frogs (Hoffman, 2000; Gibson and Sattler, 2020). Information on the natural history of salamanders is especially depauperate. The purpose of this paper is to share observations we have made for 11 salamander species over a 20 year period at White Oak Mountain Wildlife Management Area in Pittsylvania County, Virginia.

For a general description of White Oak Mountain Wildlife Management Area see Gibson and Sattler (2020). As noted in that paper White Oak Mountain WMA has a history of heavy agricultural use. As will be shown below, woodland salamanders (*Plethodon cylindraceus* and *P. cinereus*) were found in very few locations and were scarce. This suggests that their populations have still not recovered from the cyclical logging and heavy agricultural use that occurred on this land. Pond and stream-side salamanders seemed to have fared better and were found in more locations and had higher population numbers. Two exceptions were *Gyrinophilus p. porphyriticus* and *Pseudotriton r. ruber*, which were exceptionally rare.

### Study sites

White Oak Mountain Wildlife Management Area is found in the south-central piedmont in Pittsylvania County. It is a 1100-hectare (2,748-acre) property that was purchased as a series of farming tracts between 1967 and 1999. The property consists of a mix of hardwood forests, pine forests, open lands, and wetlands. The topography is rolling hills that range in elevation from 150-275 meters

(500 to 900 feet). The wetland area consists of perennial and intermittent streams, seeps, vernal pools, and 12 ponds ranging in size from 0.08 – 2.5 ha (0.2-6 acres). The ponds are all man-made and historically served as irrigation sources for the surrounding agricultural fields. This area lies within the Dan River watershed and is drained by the Banister River. The Banister River borders the northern part of the property for 12 km (7.5 miles).

### Survey Sites

The following is a general description of the major sites utilized in the survey (Figure 1).

#### Site 1 ( 36°46'36.65"N; 79°19'49.66"W)

This site consists of several intermittent streams, one of which flows out of a large wetlands area in site 2. The stream substrate is composed of sand and many rocks. Bordering the stream is a mature hardwood forest.

#### Site 2 ( 36°46'44.60"N; 79°19'56.71"W)

Site 2 has experienced many changes during the course of this survey. In the early years of this survey, there was a large pond created by damming an intermittent stream. The dam collapsed and was then reconstructed to make a smaller pond the size of which could be regulated. After the breach of the original dam and the resulting lowering of the water level in the basin, many vernal wetland areas were created. The current level of the pond is regulated by the WMA manager. It is being managed as a wildlife impoundment during the winter and is drained at the end of each summer to prevent large fish populations from being established. The



## Natural History Notes on Salamanders

pond is currently an important breeding site for *Ambystoma talpoideum*, and the pond is regulated to help enhance that species. A mature hardwood forest borders one side of this area and a pine forest borders the other.

### **Site 3** ( 36°46'52.31"N; 79°19'22.22"W)

This site contains a 0.44-hectare fishing pond and an outflowing intermittent stream. Around the pond are planted wildlife crop fields. Around the stream is a mature hardwood forest.

### **Site 12** ( 36°48'2.58"N; 79°19'54.73"W)

Site 12 includes an intermittent rocky stream with sandy bed sediments. Surrounding it is a mature hardwood forest.

### **Site 13** ( 36°48'28.09"N; 79°19'49.93"W)

This site contains a long series of shallow and deeper vernal pools surrounded by a hardwood forest.

### **Site 14** ( 36°48'8.06"N; 79°19'50.51"W)

The most interesting feature of this site is a large vernal pool which appears to be created by a road that was built over a low drainage area. This vernal pool is surrounded by a mature hardwood forest. Some years water stays in the pool all year round, but this is only in extremely wet years. Most summers, the pool dries completely.

### **Site 16** ( 36°48'37.55"N; 79°19'23.77"W)

This site is composed of a series of small vernal pools which are filled by the overflowing Banister River. Surrounding these pools is a hardwood forest.

### **Site 17** ( 36°48'21.82"N; 79°19'31.36"W)

The predominant habitat feature of this site is a large area in a mature hardwood forest which is low and creates an area with many shallow vernal pools.

### **Site 18** ( 36°47'55.88"N; 79°18'60.00"W)

Site 18 consists of several seeps and an intermittent stream. Mature hardwood forest surrounds this stream in some areas; the forest has been recently logged in the past few years along parts of the stream.

### **Site 19** ( 36°48'3.37"N; 79°18'48.36"W)

This site contains a hardwood forest with an intermittent stream. The stream bed is sandy and contains many rocks.

### **Site 22** ( 36°48'38.50"N; 79°18'47.42"W)

Site 22 is mainly a mature hardwood forest. This area also has a plot of mature planted pines. An interesting man-made feature is a small pond made from damming a natural spring.

### **Site 23** ( 36°48'49.89"N; 79°18'54.32"W)

This site has lowland features by the Banister River and a steep slope with many large granitic rocks. The lowland is a mature hardwood forest with a series of short cycle vernal pools scattered throughout. The forest floor is thick with mature hardwood leaf litter.

### **Site 24** ( 36°48'47.85"N; 79°18'27.91"W)

A 0.27-hectare man-made pond is one of the major features of this site. It has an intermittent stream flowing into and out of the pond. A hardwood forest surrounds the pond.



**Site 25** ( 36°48'54.21"N; 79°18'10.30"W)

Site 25 contains a 0.73-hectare pond with an intermittent stream flowing in and out of the pond. A hardwood forest surrounds the pond.

**Site 28** ( 36°48'57.80"N; 79°18'23.61"W)

This site contains an intermittent stream, a large shallow vernal pool, a man-made vernal pond, and a series of small woodland vernal pools scattered through a hardwood forest. The man-made vernal pond appears to be a dug-out spring, perhaps for irrigation. This vernal pond contains water all year in wet years but completely dries in dry years.

**Materials and Methods**

Observations on salamanders for this study were made from 16 January 2000 until May 2021. During this time, observations for reptiles were also collected and will be the subjects of future papers. Trips to White Oak

Wildlife Management Area were not consistent but off and on as time allowed. The wildlife management area was visited during every month of the year. Survey methods used include hand capture, flipping logs and rocks, setting plastic bottle traps, road cruising, and visual observations. All animals were inspected for disease, injury, malformations, and parasites.

**Results**

After 20 years of searching, we report a total of 11 species of salamanders inhabiting White Oak Mountain Wildlife Management Area (Table 1). In the following annotated species accounts, we report observations gathered on habitat preferences, activity dates, calling dates, egg laying dates, mortality events, disease, injury, and parasitic infections observed. All common and scientific names follow Crother (2017).



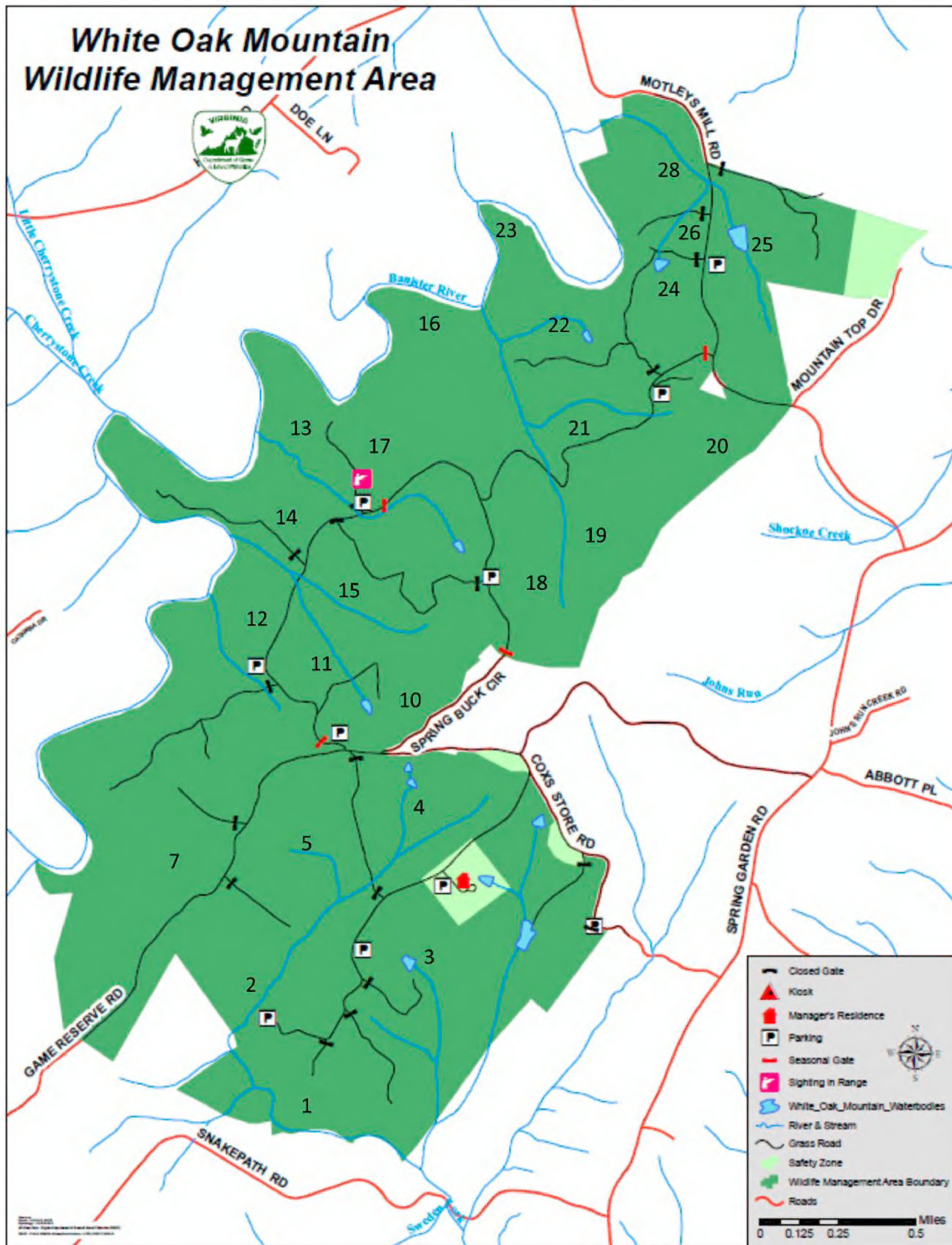


Figure 1. Survey sites within White Oak Mountain Wildlife Management Area.



Table 1. Summary of salamander species found on White Oak Mountain Wildlife Management Area by site location.

Site /Species	1	2	3	12	13	14	16	17	18	19	22	23	24	25	28
<i>Ambystoma maculatum</i>		*			*	*		*				*			*
<i>Ambystoma opacum</i>		*			*	*	*					*			*
<i>Ambystoma talpoideum</i>		*				*									*
<i>Desmognathus fuscus</i>	*	*							*	*					
<i>Eurycea cirrigera</i>	*	*		*											
<i>Eurycea guttolineata</i>	*	*							*						
<i>Gyrinophilus porphyriticus</i>									*						
<i>Notophthalmus v. viridescens</i>	*	*	*										*	*	*
<i>Plethodon cinereus</i>												*			
<i>Plethodon cylindraceus</i>	*								*		*				
<i>Pseudotriton r. ruber</i>	*														
Total	6	7	1	1	2	3	1	1	4	1	1	3	1	1	4



### Annotated species accounts

#### *Ambystoma maculatum* (Spotted Salamander)

Spotted Salamanders were found in mature hardwood forests surrounding vernal pools. The initial record for Pittsylvania County was found on White Oak Mountain WMA (Gibson, 2003a). The earliest activity date was 28 January and the latest was 22 September. The majority of adults are observed from late February into March. Adults were found under logs in or near dry vernal pools in late September. Breeding sites consisted of short and long cycle vernal pools (some within mature hardwood forests with others in the open with mature forests nearby), ditches, and water holes created from downed and uprooted trees. Egg laying was documented from 28 January to 21 March. Most egg laying occurs from mid-February to mid-March. Egg laying does correspond with warm weather and rain. Eggs are deposited in a softball sized mass which can either be clear or opaque (Figure 2). Most egg masses are deposited on stems of submerged grass, sticks, or hardwood leaves. Eight egg masses counted were found to have an average of 79 eggs per mass with a range from 21-125. The earliest egg hatching was observed on 26 March and free-swimming larvae were dip-netted as early as 17 April. Two dead spotted salamanders were found on 2 February and 21 March. One was decapitated and the other had chew injuries on its head and leg.



Figure 2. *Ambystoma maculatum* egg mass.

#### *Ambystoma opacum* (Marbled Salamander)

Marbled Salamanders were found in mature hardwood forests surrounding vernal pools. Adults of this species were found only in the Fall from 18 September to 11 October. Males arrive at breeding pools before females in mid-September. The largest grouping of adults was found on 22 September 2009. Around 100 adults were found in a dried vernal pond bed from 2030 - 2130 hr. Migration to dried vernal pools is tied to rain events in September. The females of this species lay eggs under leaf litter, logs, and rocks in the basins of unfilled vernal pools. Nests could be found from 27 September to 30 December. Females were found guarding nests from 27 September to 11 October (Figure 3). On 28 September 2008 four nests were found. Three females were observed guarding nests and one nest was not attended. The clutch size of eggs were 134, 128, 96, and 156 (the female guarding this nest measured 68 mm SVL and weighed 11.0g). On 11 October of that same year 11 more clutches of eggs were observed and counted. Table 2 has a summary of the data collected.





Figure 3. *Ambystoma opacum* female with eggs.

Table 2. Measurements of guarding females and clutch sizes

SVL(mm)	Mass(g)	# eggs	Egg measurements (mm)
74	11.2	142	6.4, 5, 5.5, 5.5, 6.1, 5.8
70	10.4	99	
62	6.6	74	6.3, 6.3, 5.5, 5.8, 5.6, 5.6
65	7	59	6.4, 7, 6.7, 6.3, 6.4, 7.1
69	10.9	166	6, 5.9, 6.3, 6, 6, 5.9, 5.8, 6, 6.2
71	8.3	92	6.1, 5.8, 6.3, 6.3, 6.3, 6.4, 5.9, 5.8
62	6.8		
		79	7.6, 6.9, 7.8, 6.7, 7.7
		93	6.7, 8.2, 7.3, 7.3, 7.2, 6.6
		77	
		105	
		297	Communal nest

An additional clutch of eggs numbering 133 eggs was counted on 7 October. A clutch of eggs was found under a large rock on 27 September 2009. This large number of eggs (297) suggests a communal nesting site. On 30 December 2019 a clutch of 133 eggs was

found unattended under a rock at the edge of a vernal pool. The nest had not yet been flooded. An examination of the eggs revealed viable moving larvae within the capsules. Despite freezing temperatures these larvae were still living. We first



started to dip-net free-swimming larvae on 28 December. Larvae could then be found from December to June (Figure 4).



Figure 4. *Ambystoma opacum* larvae.

### ***Ambystoma talpoideum* (Mole Salamander)**

Mole Salamanders were found in vernal pools surrounded by mature hardwood forests. Adults were found on 2 October and from 12 February to 23 March (Figure 5). All adults were dip-netted in vernal pools; none were ever found under cover objects surrounding these pools. The most adults we ever found at one time was five (four males, one female) on 21 March. A gravid female measured 58 mm SVL and weighed 8.4g. Four males and one female measured on 21 March had the following measurements (Table 3):

Table 3. Measurements from five adults found on 21 March 2008

Sex	Mass (g)	SVL (mm)
Male	6.2	61
Male	6.0	56
Male	8.3	62
Male	7.6	61

Female	6.2	62
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Figure 5. *Ambystoma talpoideum* adult.

Larvae were dip-netted from 17 April to 17 September (Figure 6). This species will produce paedomorphic salamanders if the vernal pool stays filled with water and does not dry up in the summer (Figure 7). Paedomorphs were observed in February, April, July, August, and December. One paedomorphic salamander was found dead on the shoreline of a vernal pool on 27 December 2015. There was no sign of predation but recent rains may have swelled the pool leaving the salamander stranded on the shoreline and unable to get enough oxygen.



Figure 6. *Ambystoma talpoideum* larvae.





Figure 7. *Ambystoma talpoideum* paedomorph.

***Desmognathus fuscus* (Northern Dusky Salamander)**

Northern Dusky Salamanders were found under logs or rocks in perennial and ephemeral stream beds. The earliest activity date was 19 February and the latest was 18 October. Two salamanders found in June and August were each parasitized by chigger mite larvae (Gibson and Sattler, 2006).

***Eurycea cirrigera* (Southern Two-lined Salamander)**

*Eurycea cirrigera* were found under logs and rocks in streams flowing through mature hardwood forests. The initial record for Pittsylvania County was found on White Oak Mountain WMA (Gibson, 2002a). The earliest activity date was 19 February and the latest was 9 October. Animals parasitized by chigger mite larvae were found on 19 February, 1 September, and 8 September.

***Eurycea guttolineata* (Three-lined Salamander)**

Three-lined Salamanders were found under rocks in streams flowing through mature hardwood forests. The initial record for Pittsylvania County was found on White Oak

Mountain WMA (Gibson, 2002b). Salamanders were found from 26 April to 21 October and every month between these dates. Males with cirri and gravid females were found on 8 September.

***Gyrinophilus porphyriticus* (Spring Salamander)**

Only one Spring Salamander was found during the survey time period (Figure 8). This animal was found in leaf litter in a spring head in a mature hardwood forest. The one adult animal was found on 26 October. This is the second report of the Spring Salamander for Pittsylvania County. The first is a specimen from Smith Mountain Lake WMA in 1956 (NCSM-Herp 68043). A digital photograph of our specimen was placed in the VHS archive (#617) as a voucher.



Figure 8. *Gyrinophilus porphyriticus* adult.

***Notophthalmus v. viridescens* (Red-spotted Newt)**

Red-spotted Newts were found in man-made ponds, vernal pools, streams flowing through mature hardwood forests, and in leaf litter and under logs in mature hardwood forests. This salamander was active from 2 January



until 30 December and was found active in every month between those dates. Amplexus was observed on 18 February, 11 March, 21 March, and 28 December. On 21 March, a male was observed in amplexus. This male for a period of time vibrated his tail around the female's head (Figure 9). Gravid females were captured on 19 February, 10 March, 12 March, and 29 April. One newt egg was found on 30 March attached to floating algae. Larvae were dip-netted from 26 May to 17 September. On 21 March and 11 October adult newts were observed eating *Lithobates sphenoccephalus utricularius* (Coastal Plains Leopard Frog) tadpoles. Newts utilized a sit and ambush type of predation. Adult and eft stage newts were found DOR on 4 September - 27 September. One adult male newt was observed with a large red cloacal swelling (Figure 10). A dead adult newt was observed being scavenged by *Anaxyrus a. americanus* tadpoles on 14 April 2005 (Gibson and Mitchell, 2006) (Figure 11).



Figure 9. Courtship in *Notophthalmus v. viridescens*.



Figure 10. Swollen cloaca in *Notophthalmus v. viridescens*.



Figure 11. A dead adult newt being scavenged by *Anaxyrus a. americanus* tadpoles.

### ***Plethodon cinereus* (Red-backed Salamander)**

In all the years we have visited this property, only one Red-backed Salamander was found. This animal was found on 18 October in a mature hardwood forest surrounding a dry vernal pool.



### ***Plethodon cylindraceus* (White-spotted Slimy Salamander)**

White-spotted Slimy Salamanders were found in three locations on the WMA. These salamanders were found in mature hardwood forests surrounding streams. Animals were found under rocks and logs. The earliest date of activity was 9 June and the latest date was 14 October.

### ***Pseudotriton r. ruber* (Northern Red Salamander)**

Only one Northern Red Salamander was found during our survey period (Figure 12). It was found on 27 June 2003 along the edge of a small stream flowing through a mature hardwood forest.



Figure 12. *Pseudotriton r. ruber* adult.

### **Discussion**

There are 13 species of salamanders documented for Pittsylvania County in the Fish and Wildlife Information Service (FWIS) database maintained by the Virginia Department of Wildlife Resources (Table 3). Of these, only three, *Desmognathus monticola*, the Seal Salamander, *Desmognathus planiceps*, the Flat-headed Salamander, and *Pseudotriton montanus*, the Eastern Mud Salamander, were not found in White Oak Mountain WMA. This emphasizes the diverse variety of habitats contained within the WMA. There are woodlands, streams and small ponds, all conducive habitats for different species of salamanders. The large size (1000+ hectares) of the WMA and the numerous man-made ponds are a distinct benefit to amphibians, and argues for the benefit of larger over smaller public wildlife refuges. Larger areas are more likely to contain a greater variety of suitable habitats than smaller areas. White Oak Mountain WMA serves a useful function in maintaining salamander diversity within Pittsylvania County.



# Natural History Notes on Salamanders

Table 4. List of species documented for White Oak Mountain WMA and Pittsylvania County as found in the Virginia Fish and Wildlife Information Database and VHS Website.

Species:	White Oak Mt. WMA	Virginia DWR
<i>Ambystoma maculatum</i>	Yes	Yes
<i>Ambystoma opacum</i>	Yes	Yes
<i>Ambystoma talpoideum</i> Tier IIa	Yes	Yes
<i>Desmognathus fuscus</i>	Yes	Yes
<i>Desmognathus monticola</i>	No	Yes
<i>Desmognathus planiceps</i>	No	Yes
<i>Eurycea cirrigera</i>	Yes	Yes
<i>Eurycea guttolineata</i>	Yes	Yes
<i>Gyrinophilus p. porphyriticus</i>	Yes	No
<i>Notophthalmus viridescens</i>	Yes	Yes
<i>Plethodon cinereus</i>	Yes	Yes
<i>Plethodon cylindraceus</i>	Yes	Yes
<i>Pseudotriton m. montanus</i> Tier IVa	No	Yes
<i>Pseudotriton r. ruber</i>	Yes	Yes
Total No. Species	11	13



White Oak Mountain WMA contains good numbers of all three species of *Ambystoma* native to central Virginia (*Ambystoma maculatum*, the Spotted Salamander, *A. opacum*, the Marbled Salamander, and *A. talpoideum*, the Mole Salamander). Numbers of Spotted and Marbled Salamanders are particularly high. Eggs and larvae are found in most of the numerous man-made ponds each spring. Mass migration of adults into vernal pools has also been observed with 50-100 adults on occasion being sighted. The Mole Salamander is more rarely seen. Because eggs are laid either singly or in small groups, they are not obvious. Adults are occasionally dip-netted in ponds. Larvae are the more obvious life stage and are dip-netted in the summer and early fall from several ponds, showing that reproduction occurs. Paedomorphic adults are found in some ponds. Several were dip-netted from one small pond which was devoid of any tadpoles, in mid-summer. The adults had apparently consumed all tadpoles of *Lithobates* species. The paedomorphs will transform and move into the surrounding forests if the ponds dry, as this pond did. No bodies were found with or under the debris at the bottom of this pond which was searched as the pond was drying.

*Desmognathus fuscus* is the only species of this genus found at White Oak Mountain WMA. *Desmognathus monticola* and *D. planiceps* are discussed below. The Northern Dusky Salamander is found in several of the rocky streams. It is a common species throughout the area.

The two species of *Eurycea* (the Southern Two-lined Salamander, *Eurycea cirrigera*, and Three-lined Salamander, *Eurycea guttolineata*) have a similar habitat and occurrence as *Desmognathus fuscus*. They are also stream-side salamanders breeding in moving waters for the most part. The Southern Two-lined Salamander will disperse into the forest during the summer to forage, while the Three-lined Salamander will stay in streams year-round. Both were found in streams flowing through the WMA. The Southern Two-lined Salamander was found to be parasitized by chigger mite larvae as were *D. fuscus* and several anuran species on the WMA (Gibson and Sattler, 2006; Gibson and Sattler, 2020).

Two other stream-side salamanders found on White Oak Mountain WMA are the Spring Salamander, *Gyrinophilus p. porphyriticus* and the Northern Red Salamander, *Pseudotriton r. ruber*. Our report here is the second for Pittsylvania County for the Spring Salamander and only the third for the Northern Red Salamander. Neither of these species, when found, is found in large numbers. The Spring Salamander, as the name suggests, is typically found in springs, seeps, and streams. These habitats, other than streams, are not common on White Oak Mountain. Red Salamanders breed in streams, but adults will wander into the forests to forage, where they are most commonly found under logs or other cover objects.

The woodland salamanders, genus *Plethodon*, are not common at White Oak Mountain WMA. *Plethodon cinereus*, the



Red-backed Salamander is, on most VHS surveys, present in large numbers. There was only one site at White Oak Mountain WMA where they are found. The White-spotted Slimy Salamander (*Plethodon cylindraceus*) is typically found in lower numbers than the Red-backed Salamander, but at White Oak Mountain WMA is found in slightly higher numbers and a wider distribution. While both species are found on the WMA, their numbers seem lower than typical for these species. One reason for this could be the past history of the WMA. White Oak Mountain WMA was purchased between 1967 and 1999. Previous to this, the land was timbered and farmed. Agricultural fields are poor habitats for salamanders. There must be recovery time required for the woodland salamanders to recolonize the land and become reestablished in significant numbers. That amount of time has perhaps not yet passed for the WMA to again host significant numbers of woodland salamanders.

The Red-spotted Newt (*Notophthalmus v. viridescens*) is present in good numbers at White Oak Mountain WMA. They are present in the permanent ponds and can occasionally be found in the streams as well, which they probably use to disperse into new habitats. Their skin toxins provide protection from most predators. They have a ready food source in the pond invertebrates, and the eggs and larvae of other amphibians. If vernal pools dry, they can migrate overland to other bodies of water. Like most permanent lakes and ponds in the area, they house good populations of Red-spotted Newts.

Of the three species not found at White Oak Mountain WMA but are reported for the County, *Pseudotriton m. montanus*, the Eastern Mud Salamander, is rarely present in large numbers at any location. It is an easy species to miss during surveys. It is a stream-side salamander, and there are long stretches of streams which are not easily accessible, and have not been extensively searched. It is possible the Eastern Mud Salamander is on the WMA, but just not yet encountered. While it is easy to demonstrate the presence of a species, it is much more difficult to prove the absence of a species. This is easier for species like the Eastern Mud Salamander which has a limited habitat in which it is typically found. There is a smaller space in which to search. The nearest records for the Eastern Mud Salamander are about 40 km to the southwest and 45 km to the northwest of White Oak Mountain WMA (FWIS Database).

*Desmognathus planiceps*, the Flat-headed Salamander, appears to be parapatric with *D. fuscus*, the Northern Dusky Salamander. It was reported from a single locality in Pittsylvania County by Tilley et al. (2008) in their initial description of the species. It is narrowly endemic to the mountains and Piedmont of south-central Virginia and adjacent North Carolina. Molecular techniques are required to differentiate these two species and only *D. fuscus* has been identified thus far in White Oak Mountain WMA. The distance from Tilley's population 9 for *Desmognathus planiceps* to White Oak Mountain WMA is approximately 35 km to the northeast (FWIS Database).



The other salamander species not yet documented for White Oak Mountain WMA is *Desmognathus monticola*, the Seal Salamander. Seal Salamanders are also stream-side species and the same argument made above for the Mud Salamander can be made here. Also, while Seal and Northern Dusky Salamanders are sometimes found sympatrically (pers. obs.) there are also instances (pers. obs.) where, while they are both found in the same general area, they are not found in close proximity to one another. There may be competition prohibiting their close association at this site. The nearest known locations for the Seal Salamander in Pittsylvania County is approximately 25 km to the northeast and 30 km to the north of White Oak Mountain WMA.

The presence of White Oak Mountain WMA in Pittsylvania County provides a beneficial haven for salamanders in south-central Virginia. The large tract of land (1100 hectares) provides a variety of habitats useful for both woodland and stream-side salamanders. The numerous ponds, streams, and vernal pools provide the breeding sites required by amphibians. The fact that 11 of the now 14 species of salamanders found in the county are on the WMA highlights the importance of the WMA to preserving the salamander diversity in an increasingly urbanized world. Of the three species reported for the county but not found at the WMA, one is rare, one is endemic to a different portion of the county, and one is fairly common but reported from only two locations in the county, both from old records. As more land is lost to development, it will become increasingly important to

maintain some land tracts for preserving wildlife. White Oak Mountain WMA is ideally positioned to do that. Continued maintenance of the WMA should preserve existing biodiversity, and hopefully increase it as the land and forests mature.

The large proportion of the local amphibians found on the WMA also highlights the importance of large tracts of land set aside for wildlife. Larger tracts of land can include a wider diversity of habitats, so a wider diversity of species can thrive. While smaller wildlife refuges may be all that can be obtained in some areas already developed, larger ones will prove to be more versatile. In addition to simply providing wildlife habitat, which not everyone may support, White Oak Mountain WMA also provides hiking trails, a gun range for sighting in rifles, and smaller agricultural fields providing food for wildlife for hunting purposes. The more versatile these areas are, the wider will be the public support for maintaining them into the future.

This study also highlights the importance of long term studies during all seasons of the year. The current study gives the results of 20 years of observations, made over all months of the year. Many species are only easily observable during one season, often the breeding season. Other times of the year they are either underground or dispersed over wide geographic areas and hard to find. We were able to document 11 of the 14 species found in Pittsylvania County at the WMA. A companion study of anurans (Gibson and Sattler, 2020) was able to document 13 of 14 anurans found in Pittsylvania County. We encourage others to initiate similar long term



studies at parks and other public lands near them, where repeated observations and surveys can be made. Careful note-taking, over years, can provide a wealth of data not easily obtained by others who may have to travel long distances and so are limited to infrequent surveys. This is an area where citizen science could make major contributions to our knowledge of Virginia's herpetological fauna. The more we know about salamander life history and phenology the better we can determine how to best preserve them for future generations.

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#### ACKNOWLEDGEMENTS

We would like to thank Tom Moss, the WMA property manager. He was very supportive and helpful in our work at White Oak Mountain Wildlife Management Area.



## Field Notes

***Hyla versicolor* (Gray treefrog)** VA: Charlottesville City. Meadowcreek Golf Course (38° 03' 00" N, 78° 27' 21" W) 7 July 2020. Chris Asquith.

City Record: Strangely, a record for Cope's Gray Treefrog (*Hyla chrysoscelis*) exists for Charlottesville City but not for Albemarle County, and records exist for Gray Treefrogs (*Hyla versicolor*) in Albemarle County but not Charlottesville City. It is likely that both city and county are sites of range overlap for these two species. Additional records are important to fill in these distribution gaps.

On 7 July 2020, I was walking by the Meadowcreek Golf Course beginning at 10:15 PM. A single male Gray Treefrog was heard calling from a tree near a small, shallow water feature on the course. The air temperature was 27.8° C and the humidity was 75% that night. An audio recording was submitted to the VHS as a voucher (Archive # 574).

**Chris Asquith**  
Charlottesville, Virginia

***Lithobates catesbeianus* (American Bullfrog)** VA: Charlottesville City. Meadowcreek Golf Course (38° 02' 50" N, 78° 27' 17" W). 7 July 2020. Chris Asquith.

City Record: American Bullfrogs are one of the most ubiquitous species of frog in Virginia and found throughout the state. Many distribution gaps are likely due to the absence of records rather than an absence of populations. The city of Charlottesville itself is only 26.6 square kilometers, and much of the recreational public land is in neighboring Albemarle County. There are only 3 anuran species recorded for Charlottesville in the FWIS Database. Many reptile and amphibian

species that are currently recorded in surrounding Albemarle County but absent in Charlottesville City are likely within the city limits but lacking records.

On 7 July 2020, I was walking by the Meadowcreek Golf Course beginning at 10:15 PM. A single male bullfrog was heard calling from one of the larger water features on the course. The air temperature was 27.8° C and the humidity was 75% that night. An audio recording was submitted to the VHS as a voucher (Archive #575).

**Chris Asquith**  
Charlottesville, Virginia

***Lithobates palustris* (Pickerel Frog)** VA: Fauquier Co., Bull Run Mountain (38°53'09.2"N 77°41'46.3"W). 19 July 2017. Matthew Ratcliffe.

County Record: In July of 2017, at 8:28 PM, I was driving on a back road on Bull Run Mountain in Fauquier County when I came upon a Pickerel Frog on the road. I moved it off the road to a nearby stream, where I observed a second individual. I documented both individuals but did not realize at the time that they were county records for this species. High temperatures that day were around 93F, and temperatures at the time of discovery were above 80F with high humidity. It had not been raining. The habitat is quite appropriate for Pickerel Frogs - deciduous forest in the Piedmont with nearby rock-lined streams. Bull Run Mountain is the easternmost front of the Blue Ridge Mountains in Northern Virginia. These two frogs were found less than 300 meters from the border with Prince William County, but undoubtedly there are plenty more Pickerel Frogs to be found in Fauquier County in areas with similar habitat, of which there are



plenty. A digital photo was submitted (Archive #620) as a voucher for this observation.

**Matthew Ratcliffe**



***Plethodon cinereus* (Eastern Red-Backed Salamander)** VA: City of Staunton, Betsy Belle Wilderness Park (38°08'11.9"N 79°03'26.2"W). 13 March 2021. Erin C. Anthony and Matthew Anthony.

City Record: This species is very common in the surrounding county. This particular park is a wooded mountain with trails for hiking and biking and a parking area at the peak. It is one of the more contiguous wooded areas within Staunton's city limits. Multiple individuals of both the lead backed and red backed morph varieties were found under rocks and logs on the Northwest slope before my coffee cooled. This species is obviously very abundant in this park. A digital photograph was submitted to the VHS Archive as a voucher (#610).

**Erin C. Anthony**  
Broadwater Academy  
Exmore, VA 23350



***Plethodon cinereus* (Eastern Red-backed Salamander):** VA City of Staunton GPS 38.14, -79.075 24 March 2021 Sarah Roberson.

Confirmation of City Record: The Eastern Red-backed Salamander has been documented in the surrounding counties and cities, but this is the second documentation inside Staunton City (see above Note for first). It was in our front yard, under a brick border which surrounds a plastic pond. It was about 2" long, black, with ash colored speckles, the lead-backed color morph. The local weather was overcast and around 10°C. After photographing the salamander, I returned it back to the same place I found it. A digital photo was submitted as a voucher (VHS Archive # 611).

**Sarah Roberson**  
Staunton, VA





***Chelydra serpentina* (Common Snapping Turtle)** VA: Buchanan Co., Fletcher's Ridge Road, Vansant (37°08'13.9"N 82°02'52.6"W). 28 May 2021. Amanda Dorton

County Record: Buchanan County is home to a vast number of species, including the common snapping turtle. Snapping turtles have been observed in many localities in Buchanan County. However, official observations of the snapping turtle in Buchanan County have not been submitted. This observation fills a gap for the snapping turtle in Virginia for the Virginia Herpetological Society.

Observation of an adult common snapping turtle occurred approximately 9:45 pm on a paved driveway. Southern Buchanan County received rain earlier in the day. The weather at the time of the observation was slightly cool for late May, foggy, and drizzly. The snapping turtle was not in distress, moving toward a grassy embankment. An old farm pond, nestled in a wooded area, is located at the bottom of the embankment. The approximate length of the turtle's shell was 11 inches. A digital photograph was submitted as a voucher (Archive # 622). This record

fills the last gap in the distribution of the Snapping Turtle in far southwestern Virginia.

**Amanda Dorton, EdS**  
Science Department  
Council High School  
7802 Helen Henderson Hwy  
Honaker, VA 24260



***Chelydra serpentina* (Snapping Turtle).** VA: Lancaster Co.; at 37° 39' 23.12"N, 76° 27' 32.18"W, 24 May 2020. Sara Amy Leach.

County Record: The observer was walking along a low bluff above the tidal Corrotoman River shoreline to the base of the Wharton Grove Association's 100 m dock. A Snapping Turtle was observed feeding on a fish at the edge of the water. A video of the turtle was recorded with the observer's phone. *Chelydra serpentina* has a state wide distribution in Virginia, occurring in most ponds where it is a top predator. One of the gaps in the distribution thus far has been several counties along the Chesapeake Bay in the Northern Peninsula. It has been vouchered from Northumberland County to



the north and Gloucester to the south, but not from Lancaster, Middlesex or Mathews Counties. While it was suspected to be present in Lancaster County, there has previously been no confirmed voucher. A digital recording of the observation was submitted to the VHS Archive (# 569) as a voucher for Lancaster County.

**Sara Amy Leach**



***Chelydra serpentina* (Snapping Turtle):** VA, Roanoke County, 0.4 km from Blue Ridge Parkway near Bedford County line (37.274265; -79.85865). 30 May 2020. Deanna Stephens.

County Record: The Snapping Turtle (*Chelydra serpentina*) has a state-wide distribution. There are few counties which do not have a vouchered record. However, Roanoke County is one of these. On 30 May 2020 I was walking along a tributary to Wolf Creek when I noticed a juvenile Snapping Turtle sunning on a mossy rock. I observed the turtle for approximately 30 minutes and took several photos of the animal. I eventually went my way, leaving the turtle undisturbed.

Snapping Turtles have been observed in every county surrounding Roanoke, so its presence here is not surprising, but helps fill another gap in the distribution record for this species. A photograph was submitted to the VHS Archive (#597) as a voucher for this observation.

**Deanna Stephens**  
Roanoke County, Virginia

***Clemmys guttata* (Spotted turtle)** VA: City of Charlottesville, (location withheld). 14 March 2021. Erin C. Anthony, Matthew Anthony, Baxter Beamer, and Tucker Beamer.

City Record: This species is found in Albemarle County, surrounding the City of Charlottesville, but not previously within the City. The park in which the turtle was observed is a forested floodplain following a creek in a suburban landscape with trails running adjacent to the creek. There was standing water that looked to be a permanent situation in parts of the floodplain. The individual swam up to a log next to the boardwalk and posed quite nicely. I was able to get photographs of the head pattern. The scutes seemed to lack the yellow spots. Painted turtles were also present which would also be another city record. I did not get identifiable photos of the painted turtles, and the Beamers had already walked out of sight with their high tech cameras. A digital photo was submitted as a voucher for the spotted turtle (VHS Archive # 612).

**Erin C. Anthony**  
Broadwater Academy  
Exmore, VA 23350





***Terrapene carolina carolina* (Woodland Box Turtle).** VA: Fairfax County, Elklick Preserve (38°52'40.4"N 77°29'15.1"W). 9 June 2020. Lauren M. Lochstampfor & John M. Orr.

Abnormal carapace: On 9 June 2020 a young Woodland Box Turtle with an unusual carapace was observed at Elklick Preserve in Fairfax County. The turtle had additional, asymmetrical, vertebral scutes which caused the vertebral column to appear to zigzag. Costal scutes on the two sides were offset from each other. An increase in scute anomalies in hatchling turtles has been linked with higher nest temperatures and drought (Zimm, R., B.P. Bentley, J. Wyneken & J.E. Moustakas-Verho. 2017. Environmental causation of turtle scute anomalies *in ovo* and *in silico*. Integrative & Comparative Biology 57(6): 1303-1311.). We encourage others to report observations of scute anomalies as a changing climate may impact incidence.

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**John M. Orr**  
George Mason University  
4400 University Drive, MS3E1  
Fairfax, VA 22030



***Haldea striatula* (Rough Earthsnake)** VA: Powhatan County, 1.2 km NE of the intersection of Rts. 672 and 605, Moseley. 37.486851 N ; -77.779594 W. 24 May 2021. Todd Georgel.

County Record: The range of the Rough Earthsnake is mostly in southeastern Virginia. (Mitchell, J. C., and K. K. Reay, 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond Virginia. 122 pp.). The VHS web site has it verified for the county neighboring on the east, Chesterfield County, but not for Powhatan County. [https://www.virginiaherpetologicalsociety.com/reptiles/snakes/rough-earthsnake/rough\\_earthsnake.php](https://www.virginiaherpetologicalsociety.com/reptiles/snakes/rough-earthsnake/rough_earthsnake.php) (accessed 24 May 2021)

Here I report a new county record for an adult male *Haldea striatula* captured under a towel that was laying on gravel near a heat pump



adjacent to a private residence. Two specimens were observed but only one was captured. Photos were taken of the specimen. Digital photos of the specimen have been deposited in the VHS archives (#618).

**Christopher Todd Georgel**

The Urban Herpetologist Pest Control and  
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Richmond, VA 23231



***Heterodon platirhinos* (Eastern Hog-nosed Snake).** VA: Madison, County. 3.5 km south of the village of Etlan. (38.492005, -78.283141) 8 May 2021. Hal White.

County Record: According to a web page on the web site of the Virginia Herpetological Society ([https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-hog-nosed-snake/eastern\\_hognose\\_snake.php](https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-hog-nosed-snake/eastern_hognose_snake.php)) the Eastern Hog-nosed Snake has been verified in 79 counties and 10 cities, but not Madison County, so this observation represents the first verified sighting in Madison County. About 15 minutes past noon on Saturday, May 8<sup>th</sup>, 2021, as the observer was driving up a gravel driveway toward Blue Quartz Winery and Shotwell Run Brewing Co. located at 2585 S F T

Valley Road, Etlan, Madison County, VA an unusual snake was crossing the road from east to west. It was a beautiful spring day in central Virginia with abundant sunshine, scattered puffy-white clouds, a steady breeze, and the temperature was 15-18 degrees centigrade. The observer picked up his cell phone, jumped out of the car, and was able to take photographs of the snake before it slithered into the tall grass of an adjacent hayfield. A couple on their way up the driveway behind the observer witnessed him taking pictures, but couldn't see the object of the photographs. The three of them conversed at the tasting and tap room and the observer conducted a Google search to try and identify the unusual snake. Upon finding the Virginia Herpetological Society web site, the observer was able to tentatively identify the snake as the Eastern Hog-nosed and he subsequently contacted the VHS and submitted photographic evidence of the sighting via email. Two members of the VHS (Kory Steele and John White) responded to the observer's email confirming correct identification of the snake and providing information necessary to register the sighting. A digital photograph of the snake was submitted as a voucher, to the VHS Archive (#614).

**Hal White**

2861 S F T Valley Road  
Etlan, VA 22719





***Nerodia taxispilota* (Brown Watersnake):**  
VA Isle of Wight County, Blackwater  
Landing near Walters. 26 February 2021  
Anonymous

County Record: On 26 February 2021, I was walking along the Blackwater Landing near Walters, Virginia when I found and photographed a snake. The digital photograph includes a clear view of its head, displaying a round pupil which distinguishes it from the venomous Cottonmouth. The blocky pattern of its markings, without any bands completely traversing, clearly shows that it is not a Northern Watersnake.

The species has been documented in the City of Suffolk to the southeast and Surry County to the northwest but not previously in Isle of Wight County. This record helps fill a gap in the distribution between the more northern and southern populations. A digital photograph was submitted to the VHS Archive (#615) as a voucher for this observation.



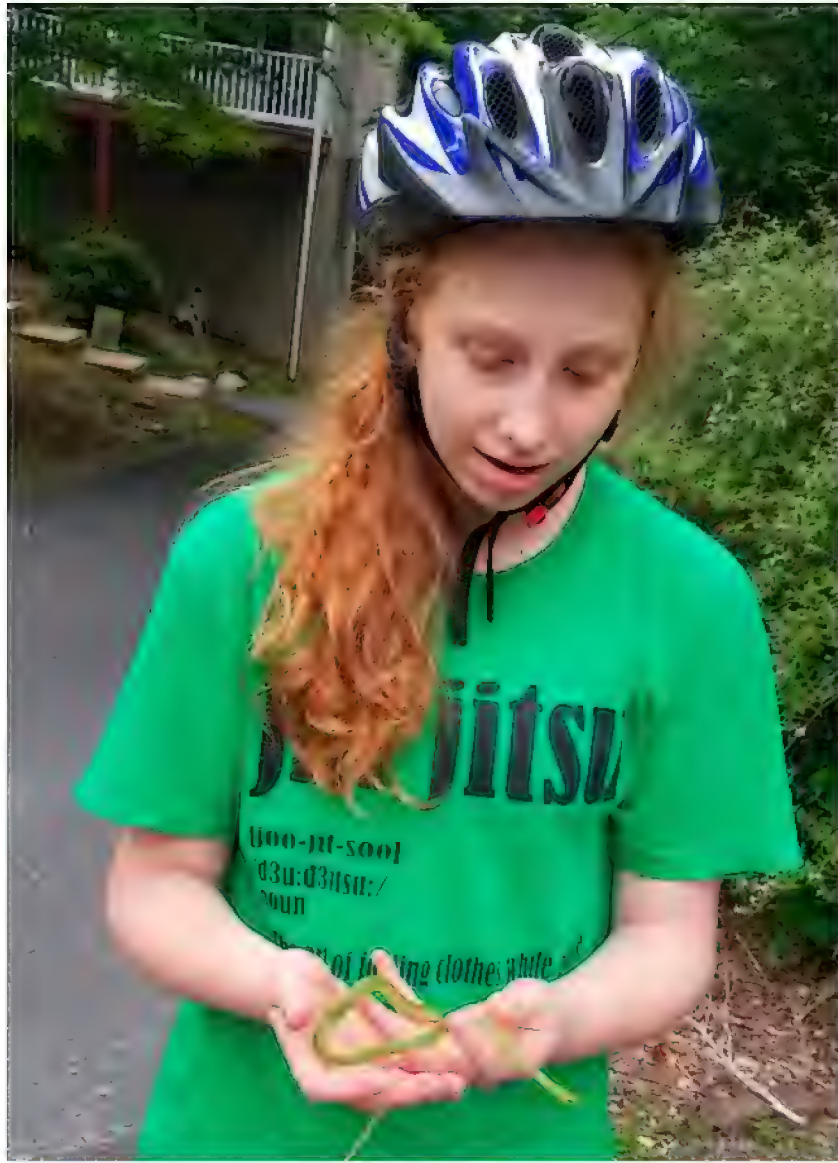
***Opheodrys aestivus*, Northern Rough Greensnake.** VA: Fluvanna County 132 Riverside Drive, Palmyra, VA, 22963 (37.90474, -78.2896), 29 May 2020. Maya E. & Todd W. Blackburn.

County Record: On 29 May 2020 while biking, I came across a Northern Rough Greensnake in my driveway. I checked the scales, which were keeled and distinguished it from the Smooth Greensnake. The Rough Greensnake has a state-wide distribution in Virginia with verified records in 83 counties and 13 cities. It has been confirmed in all surrounding counties, but not previously in Fluvanna. This record fills a distribution gap in central Virginia.

The specimen was docile, healthy, and did not appear to have any parasites, injuries, or disabilities. No attempt was made to sex the specimen or glean information regarding its reproductive cycle or health. May 29, 2020 was a Friday. The temperature in Palmyra was approximately 79°F/26°C. Humidity was 77% and pressure was 29.25in. The sky was mostly cloudy and the wind was from the South with gusts of up to 12mph. The moon was in a waxing crescent phase. A digital photograph was deposited in the VHS Archives (#609) as a voucher.

**Maya E. Blackburn**  
132 Riverside Drive  
Palmyra, VA 22963





***Pantherophis guttatus* (Red Cornsnake)**

VA: Franklin County, Water's Edge Golf Course, 1825 Waters Edge Dr (37°01'12.8"N 79°36'56.5"W). 13 May 2020. Jason L. Worley

County record: The Red Cornsnake is a fossorial snake whose range extends along the southeastern portion of the United States, from New Jersey to Florida, and west to the Mississippi River (Boynton, A. 2018. North Carolina Wildlife Profiles: Corn Snake. North Carolina Wildlife Resources Commission). Due to the lack of extensive field research and its secretive nature, reports of the Red Cornsnake in counties along the Virginia and North Carolina border are underrepresented. However, some field research has been performed along a few southern counties of Virginia, including Halifax, Pittsylvania, and Scott counties,

revealing the presence of this species. The most current map of Red Cornsnake distribution on the VHS website shows a majority of sightings occurring along the Blue Ridge Mountains and the piedmont, with a few records in the coastal plain, including the counties of Westmoreland, Northumberland, Gloucester, and James City (Tobey, F.J. 1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Society, Purcellville, VA. 91 pp., and Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia, Special Publication No.1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 88 pp.).



Upon reviewing Vertnet.org, VaFWIS database, Mitchell and Reay (op. cit.), Tobey (op. cit.), and the reptile collection at the Virginia Museum of Natural History, this field note reports what is believed to be the first documented sighting of the Red Cornsnake in Franklin County, Virginia. The observation of the Red Cornsnake in Franklin County is plausible given its distribution along the Blue Ridge Mountains and records of its sighting in the surrounding counties of Roanoke, Bedford, and Pittsylvania.

The Red Cornsnake was observed in a mulched flower bed fully extended along a rock wall at the entrance of Water's Edge Golf Course on the overcast afternoon of 13 May 2020. The entrance wall to Water's



Edge Golf Course is bordered on one side by fields and open grassy areas, and on the other side, an open hardwood forest, both of which are predominate habitats for sheltering and feeding. Due to their fossorial, nocturnal, and secretive behavior, an early afternoon sighting at 1630 h EST was unusual as certain records indicate observing live Red Cornsnakes under logs or crossing the road at dusk (Deem, D.A. 2020. Field Note: *Pantherophis guttatus guttatus*, (Red Cornsnake). Catesbeiana. 40(1), pp. 76) and Benedict, L.H. 2015. Field Note: *Pantherophis guttatus* (Red Cornsnake). Catesbeiana. 35(1), pp. 31). Although the Red Cornsnake sighting does not represent a range extension, its presence in Franklin County suggests further field research conducted in surrounding counties such as Henry and Patrick, may reveal its presence, helping fill in the gaps that remain along the southern border of Virginia. A digital voucher photograph of this species was submitted to the VHS archives (#616).

**Jason L. Worley**

Patrick Henry Community College  
STEM Division  
645 Patriot Avenue  
Martinsville, VA 24112

*Pantherophis guttatus* (Red Cornsnake). VA: Henrico Co.; at 10165 Brook Road (private property), 8 August 2019. Alex Dickinson, Larry Mendoza, and Travis Anthony.

County Record: A Henrico County Animal Protection Officer (A. Dickinson) responded to a call for a possible venomous snake located in front of the business at the above address. The officer was familiar with venomous snakes and determined that the specimen was not venomous, then contacted

an employee of the Henrico County Animal Shelter (T. Anthony) for species identification. The specimen was later identified by an officer of the Virginia Herpetological Society (L. Mendoza) as *P. guttatus* (Red Cornsnake), the first official observation of the species in Henrico County. The individual was at the beginning phase of molting, and had a few damaged scales, possibly from an encounter with another animal. The species has been documented in surrounding counties of Chesterfield, Goochland, and Hanover.





Top Photo: Snake on the day it was observed and brought in by the animal protection officer.

Bottom Photo: Snake approximately one week later in captivity.

***Thamnophis saurita* (Common Ribbonsnake):**  
Hanover County, next to the Courthouse on the Lake Hanover Nature Trail (37°45'53.92"N; 77°21'47.98"W). 6 April 2021. Kelsey Williams.



County Record: On 6 April 2021, around noon, I was on a walk at lunch around the Lake Hanover Nature Trail. The trail runs near the Hanover Courthouse through the woods and along a wetland, and then loops back to border the woods. I saw a snake on the trail in the section bordering the woods. The snake was pointed towards the woods so I am assuming it had come from the meadow area on the other side of the trail. Although the trail is called the “Lake Hanover” Trail, it’s more of a large wetland with a stream going through it. I took a digital photograph of the snake and showed the picture to my coworker, Karen Fetty, who helped me identify the snake as a Common Ribbonsnake.

The Common Ribbonsnake has an almost state-wide distribution in Virginia. It is not reported from the southwestern or southcentral counties, but is reported from most other regions. This is the first record for Hanover County and helps fill a gap in the central portion of the state. The photograph was submitted to the VHS as a voucher for this record (Archive #621).

**Kelsey Williams**

Conservation Specialist  
Hanover-Caroline SWCD  
Hanover, VA 23069

***Thamnophis sirtalis* (Eastern Gartersnake)**  
VA: Mathews County, Gwynn Island, approximately 170 meters NW of the intersection of Rt 633 and Bingo Boulevard. 37.500526 N and -76.278244 W. 15 May 2021. Todd Georgel.

County Record: The range of the Eastern Gartersnake is state wide with only a few missing localities. Mathews County is one county that does not show the Eastern Garter Snake as being found yet (Mitchell, J. C., and K. K. Reay, 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond Virginia. 122 pp.). The VHS web site has it verified for the neighboring counties around Mathews County but not for Mathews County itself. ([https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-gartersnake/eastern\\_gartersnake.php](https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-gartersnake/eastern_gartersnake.php) accessed 16 May 2021)

Here I report a new county record for an adult male *Thamnophis sirtalis* captured in a minnow trap in a drainage ditch. The drainage ditch was dry at the time of capture. The surrounding habitat is a grass field to the south and a mixed loblolly pine forest to the north. Photos were taken of the specimen in the minnow trap but I could not get clear photos out of the trap. Digital

## Field Notes

photos of the specimen have been deposited  
in the VHS archives (#619).

### **Christopher Todd Georgel**

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Wildlife Removal  
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Richmond, VA 23231





## President's Corner

Hello everyone, hope you are enjoying the active herp season for 2021! Thanks to social distancing, masks, and vaccinations to combat the pandemic, we have been able to safely get together for in person surveys to enjoy the wildlife and places we love. Perhaps most importantly, we have been able to once again enjoy the company of one another. Be on the lookout for more surveys and the annual fall meeting to be announced later in the summer. Thank you to our survey event organizers for planning and safely managing our first events back since the pandemic started last year.

In addition to surveys, several executive committee members have been active on the education side of our organization. With in person events now being scheduled, the VHS is in high demand when it comes to providing quality programs to educate the public about our native herpetofauna. If you are a member of VHS and would like to assist with these programs, or if you are interested in becoming involved on one of our executive committees, please reach out to myself or any of our current committee members.

On the membership side, we are planning some great ways to keep in touch with you via email, and continue to offer information on current events via our website, as well as educational information in our periodic newsletter and on our Facebook page. We have t-shirts available for sale for members and non-members and will soon have new

merchandise to offer via the VHS online merchandize store (see the VHS Facebook page for details or contact our merchandise committee chair). Speaking of merchandise committee chair, I would like to take the opportunity to welcome aboard our new merchandise chair, Maggie McCarthney! Maggie has a great knowledge of herps and impressive experience with handling merchandise for organizations. If you have any questions or suggestions for merchandise, Maggie can be contacted at [merchandise@vaherp\\_society.com](mailto:merchandise@vaherp_society.com).

We have had a significant number of identification requests, as well as observations submitted for the field notes section of the journal from citizens all over Virginia, which is fantastic! If you or a friend you know has any questions about how to submit a field note observation for review and possible publication, feel free to contact us. We also have a number of original research projects being proposed by VHS members; remember the VHS does offer research grants of up to \$500 for any topics related to native herpetofauna of the Commonwealth.

Be safe out there, and happy herping!

Travis Anthony  
President

**Virginia Herpetological Society**  
**Virtual Spring Business Meeting Minutes**  
**6 June 2021**

Travis Anthony, President of the Virginia Herpetological Society (VHS), opened the meeting at approximately 18:03 h. EDT and provided the agenda for the meeting. VHS Executive Committee Members (Ex-Com) Erin Anthony, Yona Britto, Mike Clifford, Jason Gibson, Bonnie Keller, Mark Khosravi, Maggie McCartney, Larry Mendoza, Matt Neff, Dave Perry, Paul Sattler, Kory Steele, Meagan Thomas and Susan Watson also participated in all or part of the meeting.

**Committee Reports**

**1. Secretary/Conservation**

Dave Perry, VHS Secretary and Conservation Committee Chair, reported that he will be moving to Texas in 2022 and a successor(s) would need to be elected during the upcoming Fall meeting. He indicated that he would be available through the spring of 2022 to assist, if needed, in the transition.

**2. Journal**

Paul Sattler, VHS Journal Editor, mentioned that the next issue of Catesbeiana would contain one major article and many field notes. Paul also noted there are now more than 600 entries in the digital archives. He has received the President's Corner, expects to receive the minutes for this business meeting, and is still waiting for the Treasurer's Report which was not included in the Fall 2020 issue. Paul has emailed Matt Close, VHS Treasurer, and requested copies of the Fall 2020 and Spring 2021 Treasurer's Reports in time for the next issue. Travis Anthony had contact with Matt, who reported that he expects to send out the Treasurer's Reports for Catesbeiana soon. Matt will be available to take questions after the report is published.

Paul expects the next issue will be sent out no later than the end of June.

**3. Education**

Mike Clifford, VHS Education Committee Chair, sent an Interim Education Committee Report to the Executive Committee (Ex-Com) prior to the meeting. Some of the highlights in this report include a 2-hour virtual presentation by Mike Clifford to the Master Naturalist trainees in the Central Piedmont Chapter, several presentations to Virginia Master Naturalists chapters by Susan Watson, VHS Permits Chair, on vernal pools and native Virginia salamanders and 9 sessions of original content on the VHS Facebook page, provided by John White, VHS Webmaster, which reached a combined audience of more than 32,000 people. Mike indicated that he also received a spreadsheet from Larry Mendoza, VHS Regulatory Affairs Committee Chair, after the Interim Report was sent out that will be included in the Annual Education Committee Report published in the Fall. Overall, Mike suggested a lot was accomplished despite the pandemic, during which VHS developed some new virtual capabilities and the transition to more live events appears to be occurring.

**4. Permits**

Susan Watson reported that all permits are up to date, the Exhibitors Permit is good until the end of October and the Scientific Collection Permit will need to be renewed for 2022. Susan requested details for any planned autumn surveys so that the current Scientific Collection Permit could be amended accordingly.



## **5. Surveys**

Jason Gibson, VHS Surveys Chair, reported that HerpBlitz is scheduled for June 12 & 13 at Mattaponi WMA. This survey was requested by the WMA management as a follow-up to the 2012 VHS survey there. There have been some prescribed burns conducted at Mattaponi and it will be interesting to see if there is any impact on the herptofauna. Thirty-four volunteers, the most ever for a HerpBlitz, are planning to participate. Jason had to cut-off participation due to parking constraints.

## **6. Website**

John White was unable to attend the meeting. However, he did report in Mike Clifford's Education Committee report that an additional 1.24 GB of content in the form of infographics, photos, texts and video clips have been added to the website.

## **7. Outreach**

Yona Britto, VHS Outreach Committee Chair, had nothing specific to report.

## **8. Grants**

Kory Steele, VHS Grants Committee Chair, reported that VHS did fund the one grant request we received. He plans more outreach to professors and others at various Virginia colleges and universities to accelerate grant requests as activity returns to normal. Kory led a survey of Machicomoco State Park in Gloucester County, one week prior to its opening. The habitat is not very conducive to herps but two solid data sheets were recorded. One noteworthy find was a live baby Diamond-back Terrapin, a first for a VHS survey. One new county record was documented for the Northern Dusky Salamander and another record established for the Eastern Red-backed Salamander which was previously undocumented for the entire middle peninsula where Gloucester County is located.

## **9. Newsletter**

Bonnie Keller, VHS Newsletter Editor, reported that the spring newsletter went out and there was no negative feedback. She is currently collecting material for the next newsletter which should be published in September/October. She also mentioned she is adopting a 16-year-old daughter, a future VHS member.

## **10. Merchandise**

Maggie McCartney is the new VHS Online Store Manager. Maggie is employed by the Wildlife Center of Virginia and conducts online professional education. Her initial plan is to stick with Café Press (email comments are welcome) and streamline the number of products that VHS offers and focus on 3-4 designs. She also has some ideas for inexpensive items for surveys and is looking for feedback. Bonnie Keller mentioned that she has some t-shirts she needs to provide to Maggie.

## **11. Advisory Committee**

Meagan Thomas, VHS Advisory Committee Member, reported that she had spent significant time working with the VHS By-laws Committee. She is optimistic about the progress made with the By-law's work. She has also conducted a handful of education events. Mark Khosravi, VHS Advisory Committee Member, reported that he continues to interact with the public as a wildlife control officer (WCO) and that he and Bonnie Keller had formed a new business, K2 Wildlife Encounters. Mark uses VHS posters and other materials and continues to invite people to join and to solicit VHS donations in lieu of payment for snake removal. Meagan asked if there is a way to track whether donations were made for Mark's services. Mark is aware of some donations of \$25-30 made as a result of his service. Bonnie Keller suggested that Matt

Close identify donations but was not sure if he is able to track why donations are made. Paul Sattler reported that a significant sum of \$565 of donations were included in the last Treasurer's Report. Travis Anthony mentioned he is sitting on a donation for a live event that he and Larry Mendoza conducted, which may occur again in the future. There was a lot of interest expressed by Meagan, Mark and Bonnie to work with Matt Close to develop a donor tracking system.

## **12. Regulatory**

Larry Mendoza, VHS Regulatory Affairs Chair, reported that most of his effort since the Fall 2020 meeting was involved in conducting 6-7 mostly virtual events including events for the Boy Scouts Troop 103 and Reynolds Community College, among others. In person event activity is picking up as Covid 19 fears decelerate. Some of the future events include a live snake exhibition for artist sketching at DelRay Artists in Alexandria and a tabletop exhibit at Prince William Forrest Park Heritage Fest, among others. On the regulatory front the Virginia Department of Wildlife Resources approved the Wildlife Viewing Plan proposed, with significant VHS input, by the Wildlife Viewing Advisory Committee. New regulations on collecting and keeping native amphibians and reptiles are also being finalized. The current regulations allow individuals to keep up to 5 specimens of any native species. That will now be reduced to a total of only one animal per household. Collectors will also be prohibited from collecting any of the tiered species such as Woodland Box Turtles etc. There will be a grandfather clause that will require registration for the animals in the collector's possession with DWR, but the existence of an Exhibitor's Permit will count as registration. There also will be some less stringent regulations concerning pet trade snakes. The

effective date of the new collection regulation is July first. J.D. Kleopfer, Hepotologist for the Commonwealth of Virginia, will inform Larry when the new regs are to be announced.

## **13. Treasurer**

Matt Close was unable to attend the meeting.

## **New Business/Discussion**

### **1. By-laws update**

Erin Anthony, VHS Vice President, provided a memo to the Ex-Com prior to the meeting which describes the major structural changes in the By-laws being proposed by the By-laws Committee (BC). While there are many non-controversial edit suggestions that have been made, Erin's memo focused on the major structural change recommendations, committee structure and the By-laws amendment process. After 6 meetings, the BC is proposing to change the committee structure to improve the efficiency and effectiveness of VHS as an organization. Any changes proposed by the BC will need to go through a voting process with the VHS Executive Committee and if ratified, be voted on by VHS Membership. The current committee structure favored by the BC is to have three standing committees: Conservation, Education and Research-under which other ad-hoc committees could be formed. Further the BC recommends that only chairs of standing committees, editors and elected positions would be on the Ex-Committee. Goals could be set for each committee to complete with annual or bi-annual progress reports. The only committee descriptions written into the By-laws would be Conservation, Education and Research. VHS members would have the option of volunteering for either standing or ad-hoc committees upon joining or renewing memberships. Under the proposed construct, the webmaster would be an editor position



and the merchandise and permits chairs would become operational positions.

The amendment changes proposed by the BC aim to modernize Article V Section I:

“Amendments to the constitution may be proposed by any active member of the VHS. Amendments should be submitted in writing to the VHS Secretary prior to a business meeting. The Secretary shall read the proposed amendment at the business meeting following receipt of the proposal. Discussion may follow the introduction of the proposal. If the proposal receives a vote of 50% of the voting members present, it shall come to the floor of the next business meeting. After reading it, and any discussion, if the amendment receives a two-thirds vote in favor of the proposal, it shall be added to the By-laws.”

Erin suggested that questions about the proposed amendment changes should be addressed to Paul Sattler. She said the BC was still examining possible further improvements to modernize Article V Section I, as well as adding a virtual voting opportunity. It is anticipated that a final version of the By-laws proposal should be sent out to the Ex-Com on or before the fall business meeting.

Megan Thomas explained that the BC objective is not to kick people off the Ex-Committee but rather to make it more efficient and easier for VHS members to join various committees. An objective would be to get more members involved, provide more choice flexibility and not limit the number of committees an individual member could join. An additional objective is to put more pressure on the individual committees to achieve more project deliverables.

## 2. Streamlining Record Submissions

Erin Anthony submitted a written proposal

for streamlining record submissions to the Ex-Committee prior to the meeting and read it during the meeting. Erin suggested our current method of submitting records is not efficient and puts all the work on one person. There is also the issue of publishing without consent as Paul Sattler has brought up in the past. She suggested some changes within the records submission process to better streamline it.

### **Shortening the Submission Requirements:**

The goal of records is to have a more complete understanding of amphibian and reptile distribution within the state. Having restrictions on what to accept based on consent for publication and length of written submission actively hinders this goal (there is a counter argument for having a data base with 100% accuracy). However, a Spring Peeper record from a new location is not notable and, in fact, is expected and should not need a full paragraph write up of habitat. Requirements for record submissions actively discourage people from submitting records. For these more common submissions, a quick note like the following should suffice i.e., *Pseudacris crucifer* (Spring Peeper) (GPS coordinates) Richmond, VA 03/24/21 Judy Sills. Erin believes that having a section of common records like this listed and then followed by a section of records that require more write-ups would help to streamline the record submission process, encourage more submissions, and not truly sacrifice any database accuracy as all of these would still be verified before publication.

**Consent of Publication:** Erin recommended that for consent of publication, VHS should first review the four factors of fair use: purpose, nature, effect and amount. The following descriptions were taken from a digital literacy program from Commonsense Media. The *purpose* of the new work is

educational, or the original work is transformed into something vastly different. The VHS would have an educational purpose, so we can check this box, The *nature* of the original work is non-fiction or based on fact. The VHS checks this box. The *effect* of the new work does not include any negative impact on the creator or the value of the original work (think \$). The VHS works in the field of biology, so there is no money involved and we can check this box. The *amount* used is only a small portion of the original work or does not include the “heart” of the work. This does not really apply to the VHS. Our publication of records could be seen as “news reporting” which is fair use of multiple medias/names/events. Erin has personally been published without her knowledge for new or uncommon sightings of birds in certain Virginia localities. Asking for consent from iNaturalist records or member who put their photos on our Facebook page is a courtesy but not a requirement for publication and the expansion of the VHS data base should not be limited by it.

**Distribution of Responsibilities** Erin is involved in other organizations that have a records committee. Forming a committee of at least three people would distribute the labor of checking various sources and contacting individuals, allowing the VHS to publish records in a timely fashion and not place undue stress on any one person. The VHS is a volunteer society and records submission should not be a full-time job. It is also important to distribute the knowledge of the verification and publication process so that the work can be continued for many years to come.

A lengthy discussion followed Erin’s presentation. Travis Anthony asked what the difference between observation submissions to VHS and DWR is. A lengthy discussion

ensued. Erin suggested that The VHS should aim to become a better data repository than DWR, an example to other herpetological conservation and the most widely used/submitted to database. Meagan Thomas mentioned that with a submission to Catesbeiana the author gets their name published in the journal. Susan Watson added that the author of a DWR submission would get their name added to the DWR data base (not quite as exciting). Susan mentioned that she receives random observations occasionally and if she notices a new county record, she directs the observer to Catesbeiana but is unsure how many follow through. She is behind in updating DWR records from Catesbeiana (current through 2017). Paul Sattler pointed out that all VHS data goes to DWR but not all DWR data goes to VHS. The DWR database gets records from all scientific collecting permits. Paul has a major concern about the accuracy of records and who checks/verifies the records. Jason Gibson and Paul have been studying the records of similar salamander species and are finding significant discrepancies. Susan Watson reported there are a lot of mistakes in the DWR database. She indicated that in the past, DWR sometimes relied on personnel inexperienced with herp identification to enter data and there are many inaccurate identifications in the DWR database. Staffing issues are problematic for resolving inaccuracies. John White is working with DWR to help synchronize the VHS and DWR data bases and reduce inaccuracies. Jason Gibson suggested that the VHS/DWR data bases were also corrupted/comprised with errors such as improper identification of cricket frogs and toad species, among others. Erin Anthony pointed out that her recommendations should not affect accuracy. Travis Anthony reminded everyone that the objective is to do what we can to help Paul Sattler with the records submission process, without sacrificing accuracy. Erin Anthony



asked if her Records committee recommendation was acceptable, but no final decision was made. Meagan Thomas requested Paul Sattler's opinion of Erin's recommendation. Paul indicated he has been filling the data gaps, and the distribution range was an easier task. There have been 3-4 instances in recent years where a museum had specimens from a county that were not included in either the VHS or DWR data base. In these cases, a verification record was made. Paul indicated that the most difficult part is parsing the data input from the person making the report and he did not feel Erin's proposal improves that, and did not see the utility of shorter entries. Erin Anthony suggested she is only trying to increase accessibility of records submission by membership and reduce the effort they are unwilling spend by meeting them halfway. Paul indicated the items in Erin's proposal did not include a brief narrative that he likes to get from the observer on how they came upon the observation and pointed out that the data entries in Erin's proposal are the hard items to get. Bonnie Keller suggested that perhaps a google form could be developed with the required field note entries to help the field note reporter be more efficient and accurate in their submission. Paul indicated a form would be very helpful and we should try that first. The Herp ID team of Yona Britto, Bonnie Keller, Mark Khosravi, Mike Clifford, Kory Steele and John White often have access to photos of county records in advance of the google form which will follow the photo. Yona Britto asked if there is photo requirement to be added to the Google form. In general, it was felt that the photo typically comes in to the herp ID team and is in Paul's files prior to submission of the form. Bonnie suggested that in the Google form there would be a place for a photo to be added. Requiring a photo with the Google form might complicate the ability of the inexperienced observer to make their report. Yonna Britto

asked if GPS coordinates on the photo is a requirement. Bonnie Keller suggested VHS primarily relies on the honor system for county location details. Paul took some time to explain how the system data base and voucher works for county records and how information can be retrieved from the data base. It was agreed that Bonnie Keller would work with John White to develop a Google form based on the required information that Paul will supply and that the photos would not have to be attached to the form.

### **3. Potential partnerships with Bull Run Mountains Natural Area Preserve and Crow's Nest Research Center**

Travis Anthony complimented the original research work being undertaken by some Ex-Com members and advocated for additional independent research projects. Travis indicated that the VHS has an opportunity to partner with Bull Run Mountain Natural Area Preserve (Joe Valeri) who is adding a position to work with Marty Martin on data gathering for Timber Rattlesnakes. Joe would welcome VHS input and feedback on the project and other collaboration. Travis will also meet with Crow's Nest Research Center where the VHS can use their natural area for research collaboration, surveys etc. Travis encouraged original research participants to consider applying for VHS grants.

### **4. Nominating Committee for Fall Elections and Awards**

Travis Anthony read Erin Anthony's idea for forming a temporary committee to recognize individuals who have worked in herpetology or contributed to VHS. Erin suggested at the fall meeting we should recognize individuals who have put work into herpetology and the VHS as the last awards given were two years prior. For this, a nominating committee should be temporarily formed where members and the board can nominate



members in good standing. This temporary committee can also coordinate elections. All candidates for elected positions should appear at the business meeting and present their qualifications and vision for the society. No decision was made.

### **5. Fall Meeting 2021**

Travis Anthony is beginning to plan for the Fall Meeting and is seeking assistance through the formation of a planning committee, which he will lead. The planning committee will include potential nominating committees for elections and awards, selection of technical presentations, auctions, photo contests, etc. A decision will need to be made for either an in-person or virtual session. With proper notification, Susan Watson has indicated VHS could use DWR headquarters offices again if an in-person meeting is selected.

### **6. Lake Anna Survey**

Matt Neff, VHS Past President, indicated he might try to lead a VHS “members only” re-survey of Lake Anna State Park in late September. If he proceeds, he will make sure to avoid any date conflict with the annual fall meeting.

### **7. Copperhead Relocation Research Study**

Bonnie Keller and Mark Khosravi described a proposed research study they are working on with Joe Erenberger, a wildlife biologist friend of Mark’s in Colorado, to capture Northern Copperheads in an area of Virginia, then place pit-tags and radio transmitters on them for tracking purposes. These individuals would be tracked for a year. In the second year, captured copperheads relocated from north Virginia urban areas that Bonnie and Mark service, would also be pit-tagged and have radio transmitters placed on them. These individuals would then be released in the original area and would be tracked along with snakes native to the area.

In this way, the comparative mortality and range of the native and relocated snakes could be compared. Part of the project would be to insure/increase public safety as well as the safety of the snakes involved in the project, and to determine if it is feasible to safely relocate copperheads. It is possible the project could be extended for a third year. J.D. Kloepper is supporting the research. Professor Joe Erenberger has some radio transmitters/receivers for tracking which he would loan for the project and a grant request will be made for additional units. Mark indicated that site permission is still required and perhaps either Bull Run Conservancy or Prince William Forest Park might be interested. He added that this project could be used as a promotion for VHS membership. Volunteers will be needed for tracking 7 days/week. Tracking would not include handling the animals, except by 2-3 participants like Mark who are experienced. Mark asked if VHS endorsement would be possible and if the VHS logo could be used for the project. Travis Anthony requested that Mark provide him with the details for a future decision. Bonnie Keller agreed to post the project details on the shared Google Drive and suggested it is possible the project could be delayed to the Fall of 2021 or until 2022. Meagan Thomas asked about the sample size given the expense associated with the transmission equipment. Bonnie indicated the sample size would be up to 12 individuals per site but would be driven by the number of volunteers for tracking. The transmitters would be loaned to the project and the Wildlife Center of Virginia would do the implants.

There being no other business to discuss, Travis Anthony adjourned the meeting at approximately 21:15 h.

Dave Perry  
VHS Secretary



**Virginia Herpetological Society**  
**Treasurer's Report**  
**June 23, 2020**

Balance Spring 2020	\$	26,059.34
Previous Balance (Not published)-Dec. 6, 2020	\$	21,102.08

**Net Receipts (excludes PayPal Fees)**

Dues	\$	4217.00
Donations	\$	635.00
Amazon Smile	\$	298.55
Merch	\$	121.20

**Expenses (12/7/2020-06/23/2021)**

Grants- L.Fuchs	\$	500.00
Tabling and Promotional Supplies & Materials	\$	0.00
Liability Insurance Premium (Francis L. Dean & Associates)	\$	463.50
VA SCC Annual Filing Fee	\$	25.00
Merchandise Order (VHS Logo shirts and hoodies)	\$	783.66
Postage	\$	24.76
Merchandise Fees (Printful, Bonanza)	\$	21.51
Paypal Fees	\$	285.40
Domain Renewal	\$	140.80
Web Hosting Fee (encumbered)	\$	139.99

Current Gross Balance	\$	24,129.20
Checks Outstanding	\$	139.99

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<b>Current Available Balance (unencumbered)</b>	<b>\$</b>	<b>23,989.21</b>
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VHS Memberships (dues current)

Regular:	295
Student:	15
Lifetime:	83

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<b>Total</b>	<b>393</b>
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Matthew Close  
VHS Treasurer



## Field Notes

The Field Notes section of *Catesbeiana* provides a means for publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. **All Field Notes must include a brief statement explaining the significance of the record** (e.g., new county record) **or observation** (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed pending consultation with the author(s).

If the Field Note contains information on a **new county (or state) record, verification is required in the form of a voucher specimen** deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a **photograph** (print, slide, or digital image) **or recording** (cassette tape or digital recording of anuran calls) deposited in the archives of the Virginia Herpetological Society. Photographs and recordings should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult Mitchell and Reay (1999. *Atlas of Amphibians and Reptiles in Virginia*), Mitchell (1994. *The Reptiles of Virginia*), and Tobey (1985. *Virginia's Amphibians and Reptiles: A Distributional Survey*) [**both atlases are available on-line on the VHS website**] as well as other recent literature to determine if they may have a new county record. New distribution records from large cities that formerly constituted counties (Chesapeake, Hampton, Newport News, Suffolk, and Virginia Beach) are acceptable, but records from smaller cities located within the boundaries of an adjoining county will only be published if the species has not been recorded from that county. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

## PHOTOGRAPHS

High contrast photographs (prints, slides, or digital images) of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Digital images are preferred. Prints should be on glossy paper and no larger than 5 x 7 inches. Published photographs will be deposited in the Virginia Herpetological Society archives.



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